ECOSYSTEM-BASED MANAGEMENT INDICES AND INFORMATION

Ecosystem Goal: Maintain and Restore Fish Habitats

Hook and Line (Longline) fishing effort in the Gulf of Alaska, Bering, Sea and Aleutian Islands

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Last updated: November 2005

The amount of effort (as measured by the number of days fished) in hook and line fisheries is used as an indicator for habitat effects. Effort in the hook and line fisheries in the Bering Sea, Aleutian Islands, and Gulf of Alaska is shown in Figure 116. This fishery is prosecuted with stationary lines, onto which baited hooks are attached. Gear components include the anchors, groundline, gangions, and hooks. The fishery is prosecuted with both catcher vessels and freezer longliners. The amount of effort (as measured by the number of sets) in longline fisheries is used as an indicator for target species distribution as well as for understanding habitat effects. Figures 118-122 show the spatial patterns and intensity of longline effort, based on observed data as well as anomalies based on year 2004. Spatial changes in fisheries effort may in part be affected by fishing closure areas (i.e., Steller sea lion protection measures) as well as changes in markets and increased bycatch rates of non-target species. Changes in fishing effort are shown in the anomaly plots that look at current effort relative to previous effort.

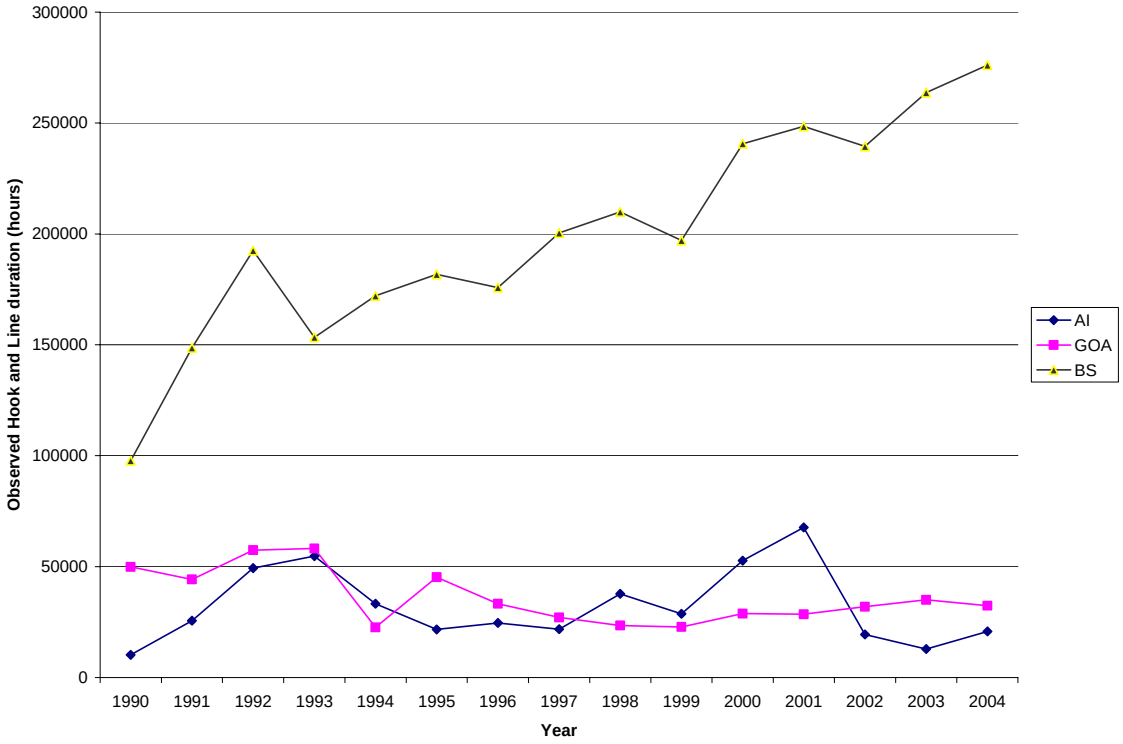

Figure 116. Estimated hook and line duration in the Gulf of Alaska, Bering Sea, and Aleutian Islands during 1990-2004.

Bering Sea

For the period 1990-2004, there were a total of 171,043 observed longline sets in the Bering Sea fisheries. Spatial patterns of fishing effort were summarized on a 5km2 grid (Figure 117). Areas of high fishing effort are north of False Pass (Unimak Island) as well as the shelf edge represented by the boundary of

report areas 513 and 517, as well as areas 521-533. This fishery occurs mainly for Pacific cod, Greenland turbot, and sablefish. In 2004, fishing effort was anomalously high throughout the main fishery footprint, and is not readily attributable to seasonal allocations (Figure 118).

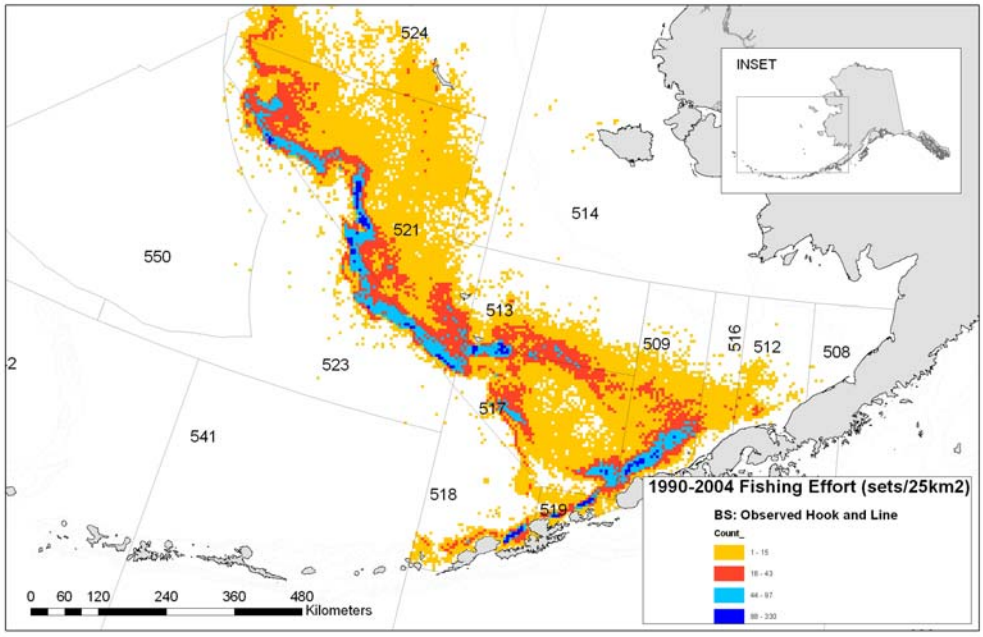

Figure 117. Spatial location and density of hook & line (longline) effort in the Bering Sea 1990-2004.

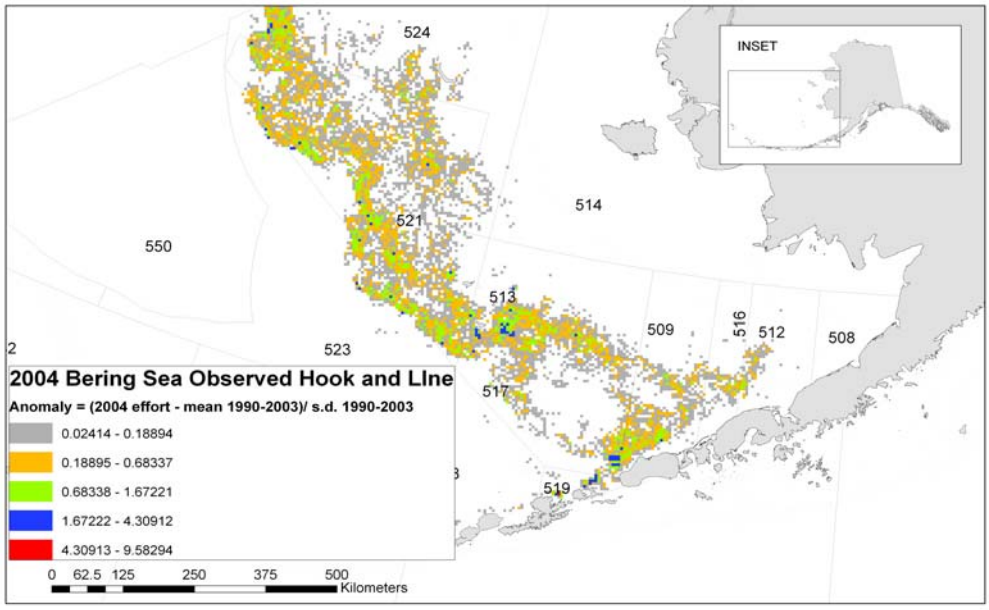

Figure 118. Anomaly plot for Bering Sea observed hook and line (longline) effort in 2004 relative to the average effort during 1990-2003 ((estimated effort for 2004 - average effort from 1990-2003)/stdev(effort from 1990-2003)).

Aleutian Islands

For the period 1990-2004 there were 36,104 observed hook and line sets in the Aleutian Islands. The spatial pattern of this effort was dispersed over a wide area. Patterns of high fishing effort were dispersed along the shelf edge (Figure 119). This fishery occurs mainly on Pacific cod, Greenland turbot, and sablefish. The catcher vessel longline fishery occurs over mud bottoms. In the summer, the fish are found in shallow (150-250 ft) waters, but are deeper (300-800 ft) in the winter. Catcher-processors fish over more rocky bottoms in the Aleutian Islands. The sablefish/Greenland turbot fishery occurs over silt, mud, and gravel bottom at depths of 150 to 600 fm. In 2004, fishing effort was anomalously high in areas 541 and 542 and was based primarily within the Pacific cod and sablefish fisheries (Figure 120).

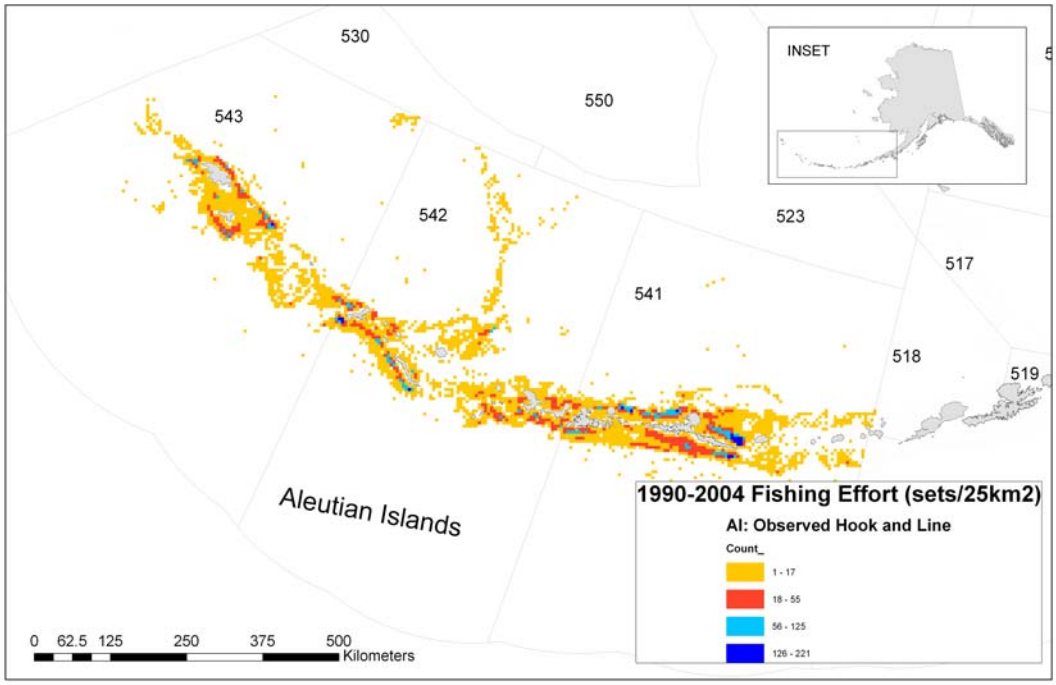

Figure 119. Spatial location and density of hook & line effort in the Aleutian Islands, 1990-2004.

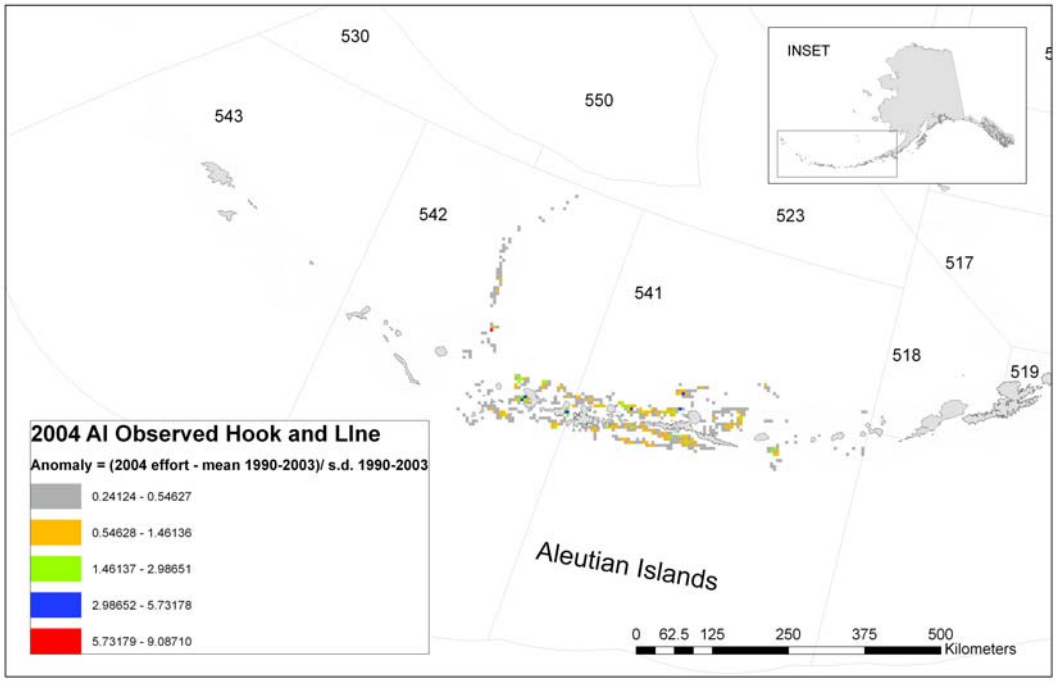

Figure 120. Anomaly plot for Aleutian Islands observed hook and line (longline) effort in 2004, relative to the average effort during 1990-2003 ((estimated effort for 2004 - average effort from 1990-2003)/stdev(effort from 1990-2003)).

Gulf of Alaska

For the period 1990-2004 there were 34,625 observed hook and line sets in the Gulf of Alaska. Patterns of high fishing effort were dispersed along the shelf (Figure 121). The predominant hook and line fisheries in the Gulf of Alaska are composed of sablefish and Pacific cod. In southeast Alaska, there is a demersal rockfish fishery dominant species include yelloweye rockfish (90%), with lesser catches of quillback rockfish. The demersal shelf rockfish fishery occurs over bedrock and rocky bottoms at depths of 75 m to >200 m. The sablefish longline fishery occurs over mud bottoms at depths of 400 to >1000 m. This fishery is often a mixed halibut/sablefish fishery, with shortraker, rougheye, and thornyhead rockfish also taken. Sablefish has been an IFQ fishery since 1995, which has reduced the number of vessels, crowding, gear conflicts and gear loss, and increased efficiency. The cod longline fishery generally occurs in the western and central Gulf of Alaska, opening on January 1st and lasting until early March. Halibut prohibited species catch sometimes curtails the fishery. The cod fishery occurs over gravel, cobble, mud, sand, and rocky bottom, in depths of 25 fathoms to 140 fathoms. In 2004, fishing effort was anomalously high throughout the main fishery footprint, and is not readily attributable to seasonal allocations (Figure 122).

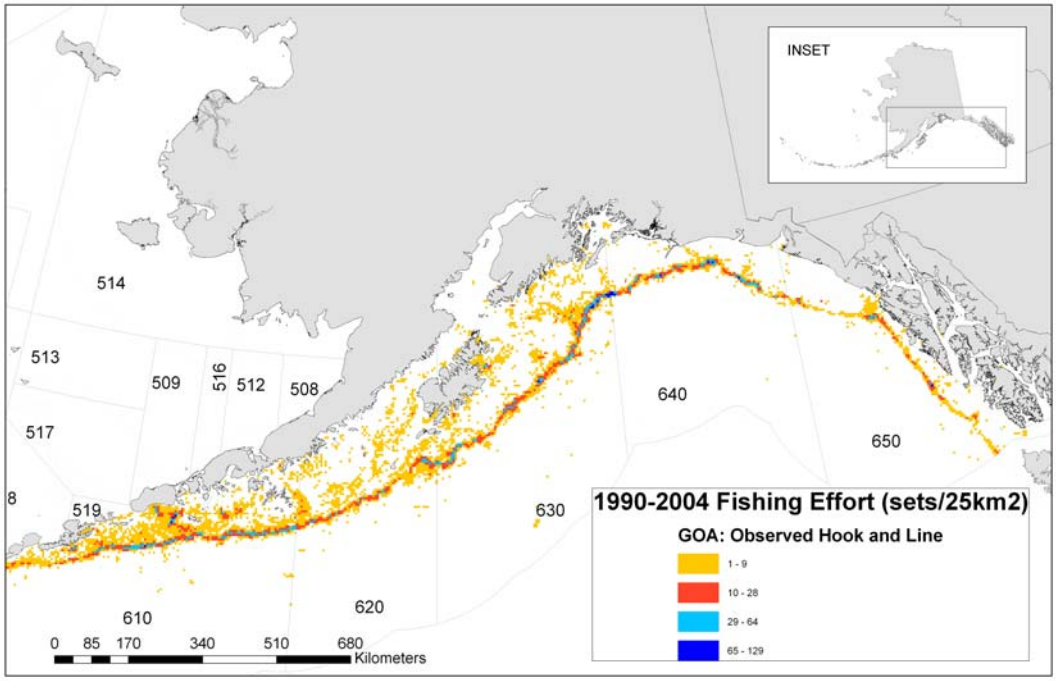

Figure 121. Spatial location and density of hook & line effort in the Gulf of Alaska, 1998-2003.

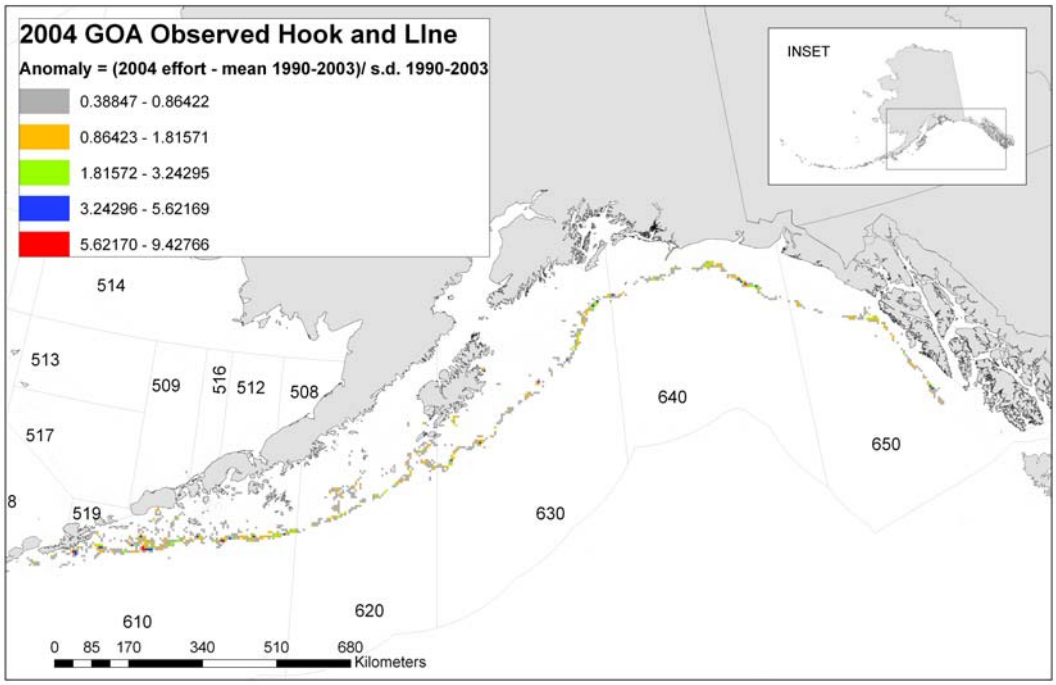

Figure 122. Anomaly plot for the Gulf of Alaska observed hook and line (longline) effort in 2004, relative to the average effort during 1990-2003 ((estimated effort for 2004 - average effort from 1990-2003)/stdev(effort from 1990-2003)).